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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,655	12/11/2001	Jason Naxin Wang	80398P468	2853

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EXAMINER	
VO, TUNG T	
ART UNIT	**PAPER NUMBER**
2613	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/020,655	Applicant(s) WANG ET AL.	
	Examiner Tung T. Vo	Art Unit 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-2, 7, 9, 21-22, 29, and 31-32 are rejected under 35 U.S.C. 102(e) as being anticipated by Linzer et al. (US 6,229,850 B1).

Re claims 1, 7, 21, 29, and 31, Linzer discloses a system (fig. 4) comprising an interface (32 of fig. 4) coupled to a bus to receive a real time video stream;

a main processor (34 of fig. 4, note the first compressor (34) is considered as a run length encoder, see col. 6, lines 60-65) coupled to the bus, the main processor to process a first group of video encoding tasks comprising those video encoding tasks not including variable length encoding involved with encoding the real time video stream;

a co-processor (38 of fig. 4, note the second compressor (38) is considered as a variable length encoder, see also col. 6, lines 60-65) coupled to the bus, the co-processor to process a

second group of video encoding tasks including variable length encoding tasks involved with encoding the real time video stream.

Re claims 2, 22 and 32, Linzer further discloses wherein the first group of video encoding tasks and the second group of video encoding tasks comprise those tasks required of at least one of the Moving Pictures Expert Group (MPEG) standards for video encoding (col. 1, lines 1, lines 23-26).

Re claim 9, Linzer further discloses an audio output interface; and a video output interface (col. 1).

3. Claims 1-4, 7-15, 18-25, 28-34, and 37-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Woo et al. (US 5,781,788).

Re claims 1 and 11, Woo discloses a system (figs. 2 and 3) comprising an interface coupled to a bus (50, 52 of fig. 3) to receive a real time video stream;

a main processor (92 of fig. 3, note a run length coder (RLC, 92) is considered a main processor) coupled to the bus, the main processor to process a first group of video encoding tasks comprising those video encoding tasks not including variable length encoding involved with encoding the real time video stream;

a co-processor (98 of fig. 3) coupled to the bus, the co-processor to process a second group of video encoding tasks including variable length encoding tasks involved with encoding the real time video stream.

a main memory coupled to the bus (60 of fig. 3);

an interface (CPU 64 of fig. 3) coupled to the bus to receive a real time video stream; and a storage device (66 of fig. 3) coupled to the bus, the storage device having instructions stored thereon which when executed by the main processor allocate a first group of video encoding tasks to the main processor and a second group of video encoding tasks to the co-processor.

Re claims 2, 13, Woo further discloses wherein the first group of video encoding tasks and the second group of video encoding tasks comprise those tasks required of at least one of the Moving Pictures Expert Group (MPEG) standards for video encoding (H.261, I, P, and B and GOP, col. 4).

Re claims 3, 14, Woo further discloses the first group of video encoding tasks comprises at least motion estimation, pre-processing, mode selection, forward discrete cosine transform computation, forward quantization computation, rate control, zig zag scanning, inverse discrete cosine transform computation, inverse quantization computation, and motion compensation (66-108 of fig. 3);

the second group of video encoding tasks comprises variable length encoding computation (98, VLC of fig. 3).

Re claims 4, 15, Woo further discloses wherein the variable length encoding computation comprises: macroblock header encoding (Y, Y, and V pattern, 88 of fig. 3); motion vector encoding (see the conventional of variable decoder, fig. 6, element 328); and discrete cosine transform coefficients encoding (DCT 304 of fig. 6).

Re claims 7, 18, Woo further discloses wherein the co-processor is a variable length encoder/decoder co-processor (36 of fig. 2, and 98 of fig. 3).

Re claims 8, 19, Woo further discloses (fig. 1, cols. 1 and 2) wherein the interface is at least one of a broadcast interface and a network interface (20 and 22 of fig. 1).

Re claims 9, 20, Woo further discloses an audio output interface; and a video output interface (channel includes audio and video called audio-visual signal, see col. 1, lines 5-20).

Re claims 10, 21, Woo further discloses wherein the real time video stream is at least one of a television signal received wirelessly and a television stream received via a hardwired connection (20 and 22 of fig. 1).

Re claim 12, Woo further discloses the second group of video encoding tasks comprises variable length encoding tasks involved with encoding the real time video stream according to a well known standard (H.261 standard col. 4, lines 18-20); and

the first group of video encoding tasks comprises those video encoding tasks not including variable length encoding involved with encoding the real time video stream according to the well known standard (col. 8, lines 18-20).

Re claims 22-25, 28-30, see analysis in claims 11-15, 18-21.

Re claims 31-34, 37-39, see analysis in claims 11-15, 18-21.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 6, 17, 27, and 36 rejected under 35 U.S.C. 103(a) as being unpatentable over Woo et al. (US 5,781,788) as applied to claims 1, 3, 11, 14, 22, 24, 31, and 33, and in view of Linzer et al. (US 6,229,850 B1).

Re claims 6, 17, 27, and 36, Woo teaches the pre-processing (66 of fig. 3) but not comprise noise reduction as claimed.

However, Linzer teaches pre-processing filters (col. 6, lines 60-65) used in the encoder (34 or 38 of fig. 4) reduce noise of the input signal. Therefore, takings the combined teachings of Woo and Linzer as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the pre-processing filters (col. 6, lines 60-65) of Linzer into the system of Woo for the same purpose of reducing noise of the input video signal. Doing would produce high quality encoded signal as suggested by Linzer (fig. 6).

6. Claims 5, 16, 26, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woo et al. (US 5,781,788) as applied to claims 1, 3, 11, 14, 22, 24, 31, and 33, and in view of Lee (US 6,317,460).

Re claims 5, 16, 26, and 35, Woo teaches the motion estimation (32 of fig. 3) except a first phase includes top to top searching and bottom to bottom searching; and a second phase includes top to bottom searching and bottom to top searching as claimed.

However, Lee teaches a first phase includes top to top searching and bottom to bottom searching; and a second phase includes top to bottom searching and bottom to top searching (fig. 3).

Therefore, taking the combined teachings of Woo and Lee as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the top to bottom and the bottom to top searching in motion estimation (fig. 3) of Lee into the motion estimation (32 of fig. 3) of Woo for accurately performing motion estimation.

Doing so would greatly reduce the computational requirements of motion estimation processing for video encoding schemes.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Reisch (US 5,706,216) discloses a system for data compression of an image using a JPEG compression circuit modified fro filtering in the frequency domain.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung T. Vo whose telephone number is (703) 308-5874. The examiner can normally be reached on 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris. Kelley can be reached on (703) 305-4856. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TUNG T. VO
PRIMARY PATENT EXAMINER

Tung T. Vo
Primary Examiner
Art Unit 2613

T.Vo